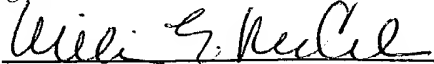


JC03 Rec'd PCT/70 19 JUL 2001

FORM PTO-1390 (REV. 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER 27706/40002	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 09/889657	
INTERNATIONAL APPLICATION NO. PCT/GB00/00149		INTERNATIONAL FILING DATE 20 January 2000		PRIORITY DATE CLAIMED 20 January 1999	
TITLE OF INVENTION BANDAGE					
APPLICANT(S) FOR DO/EO/US Paul Bennett, Ian D. Cracknell					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below. 4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau). b. <input checked="" type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)). a. <input type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). 7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)). 9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).					
Items 11 to 20 below concern document(s) or information included:					
11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. 14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 15. <input type="checkbox"/> A substitute specification. 16. <input type="checkbox"/> A change of power of attorney and/or address letter. 17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 20. <input checked="" type="checkbox"/> Other items or information:					
Copy of published int'l. appl.; Copy of Int'l. Prel. Exam. Report; Copy of Amendment Under PCT Article 34.				<div style="border: 1px solid black; padding: 5px;"> <div style="text-align: center; font-weight: bold; font-size: small;"> CERTIFICATE OF MAILING BY EXPRESS </div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> EXPRESS MAIL® mailing label No. EL 900439627 US Date of Deposit: July 19, 2001 </div> <p style="font-size: x-small;">I hereby certify that these papers (and fee) are being deposited with the United States Postal Service "EXPRESS MAIL POST OFFICE TO ADDRESSEE" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to Assistant Commissioner for Patents, Box PCT, Washington, D.C. 20231</p> <div style="text-align: right;"> <small>JANET T. CIZMAR</small> </div> </div>	

U.S. APPLICATION NO. 09/889657 INTERNATIONAL APPLICATION NO. PCT/GB00/00149		ATTORNEY'S DOCKET NUMBER 27706/40002	
21. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO. \$1000.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$860.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$710.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$690.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 ENTER APPROPRIATE BASIC FEE AMOUNT =		CALCULATIONS PTO USE ONLY <div style="display: flex; justify-content: space-between;"> \$ 860.00 </div>	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).		<div style="display: flex; justify-content: space-between;"> \$ </div>	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	28 - 20 =	8	x \$18.00
Independent claims	1 - 3 =	0	x \$80.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$270.00
TOTAL OF ABOVE CALCULATIONS =			\$ 1,004.00
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.			+
SUBTOTAL =			\$ 502.00
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).			\$
TOTAL NATIONAL FEE =			\$ 502.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +			\$
TOTAL FEES ENCLOSED =			\$ 502.00
			Amount to be refunded:
			charged:
a. <input checked="" type="checkbox"/> A check in the amount of \$ <u>502.00</u> to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>50-1903</u> . A duplicate copy of this sheet is enclosed. d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.			
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.			
SEND ALL CORRESPONDENCE TO: William E. McCracken MCCracken & ASSOCIATES 200 S. Wacker Drive, Suite 3100 Chicago, IL 60606 Telephone: (312) 674-4630 Facsimile: (312) 674-4629		 SIGNATURE William E. McCracken NAME 30,195 REGISTRATION NUMBER	

09/889657
JC18 Rec'd PCT/PTO 1-9 JUL 2001

PATENT
27706/40002

**IN THE UNITED STATES PATENT
AND TRADEMARK OFFICE**

Applicant(s): Bennett et al.

Serial No.:

Filed: Herewith

Based Upon Int'l. Appl.
No.: PCT/GB/00/00149

Int'l. Filing Date: January 20, 2000

For: BANDAGE

CERTIFICATE OF MAILING BY EXPRESS

"EXPRESS MAIL" mailing label No. EL 900439627 US
Date of Deposit: July 19, 2001

I hereby certify that these papers (and fee) are being deposited with the United States Postal Service "EXPRESS MAIL POST OFFICE TO ADDRESSEE" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to Assistant Commissioner for Patents, Box PCT, Washington, D.C. 20231

By:

Printed Name: JANET T. CIZMAR

PRELIMINARY AMENDMENT

Commissioner for Patents
Box PCT
Washington, D.C. 20231

Sir:

Reference is hereby made to the current PCT application as amended under Article 34 (copy enclosed). Preliminary to examination on the merits, please amend the above-identified application as follows:

In the Claims:

Please amend claims 4, 5, 7, 8, 12, 15-18, 20 and 23-27 as follows:

Clean Version of Claims

1. A bandage shaped to conform substantially to the whole of a lower leg of a patient, comprising a first absorbent layer for arrangement adjacent the skin of a patient, and a second absorbent layer on the first absorbent layer, the second absorbent layer having a greater propensity for absorption of fluids than the first absorbent layer, whereby when the bandage is arranged over a wound of a patient, the first absorbent layer can absorb fluid from the wound and the second absorbent layer can absorb said fluid from the first absorbent layer.
2. A bandage according to claim 1 further including a third layer on the second absorbent layer on the opposite side thereof to the first absorbent layer.
3. A bandage according to claim 2 wherein the third layer is an absorbent layer and has a lower propensity for absorption than the second layer.
4. (Amended) A bandage according to claim 2 wherein the third layer is permeable to vapour, thereby allowing the skin to breathe.
5. (Amended) A bandage according to claim 2 wherein the third layer has substantially the same absorbency as, or less absorbency than, the first absorbent layer.
6. A bandage according to claim 5 wherein the third layer is formed of the same material as the first absorbent layer.
7. (Amended) A bandage according to claim 2 wherein the third layer is substantially impermeable to liquid but permeable to vapour.
8. (Amended) A bandage according to claim 1, wherein the bandage is shaped to conform to the whole of the lower leg and a foot of the patient.

9. A bandage according to claim 8 including a first part shaped to conform to the whole of the lower leg of the patient and a second part shaped to conform to the foot of the patient.

10. A bandage according to claim 9 wherein the bandage has stitching along the region thereof conforming to the calf region of the leg, and stitching along the region conforming to the heel region of the foot.

11. A bandage according to claim 10 further including stitching in a region conforming to the toe region of the foot.

12. (Amended) A bandage according to claim 1 wherein the bandage has opposite side edges wherein the side edges can be overlapped to a desired degree to fit the bandage to the patient's lower leg.

13. A bandage according to claim 12 wherein securing means are provided to secure the edge regions together.

14. A bandage according to claim 13 wherein the securing means is in the form of an adhesive tape.

15. (Amended) A bandage according to claim 12 wherein suitable tabs and/or flaps are provided to ensure appropriate overlap.

16. (Amended) A bandage according to claim 1 wherein the first absorbent layer includes a polyester viscose material.

17. (Amended) A bandage according to claim 1 wherein the second absorbent layer includes a polyester felt, suitably an hydrophilic polyester felt.

18. (Amended) A bandage according to claim 1 wherein the second absorbent layer includes cotton wool.

19. A bandage according to claim 2 wherein the third layer comprises a polyester viscose material.

20. (Amended) A bandage system comprising a first bandage according to claim 1 and a second bandage being a compression bandage, the second bandage comprising a sheet of elastic material and means for releasable maintaining the sheet of elastic material in a stretched condition around the patient's lower leg.

21. A bandage system according to claim 20 wherein the second bandage is formed from a rubber or rubber-like material.

22. A bandage system according to claim 21 wherein the second bandage is formed from a synthetic rubber, for example neoprene.

23. (Amended) A bandage system according to claim 20 wherein the means for maintaining the material around the patient's lower leg includes an outer attachment associated with a side edge region of the sheet, the outer attachment comprising a plurality of tabs provided along substantially the length of said side edge.

24. (Amended) A bandage system according to claim 23 wherein the tabs are so provided along the length of said side edge that there are substantially no gaps between adjacent tabs when the bandage is correctly applied to the patient's lower leg.

25. (Amended) A bandage system according to claim 23 wherein one part of a hook and fleece fastening means is provided on an inner face of each tab and the other of said hook and fleece fastenings is provided on the sheet.

26. (Amended) A bandage system according to claim 25 wherein each tab is stretchable whereby when the second bandage is applied to the lower leg of a patient, the degree of stretch of the sheet material and of the tabs determines the pressure applied to the lower leg at the respective tab.

28. A bandage system according to claim 27 wherein the visual indication means comprises a shape applied to at least some of the tabs to indicate that the correct pressure is applied when the shape alters in a recognisable way.

-6-

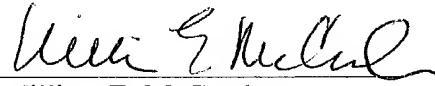
Remarks

Claims 4, 5, 7, 8, 12, 15-18, 20 and 23-27 have been amended to eliminate multiple dependencies in the claims. None of the claims has been narrowed by this amendment.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached pages 8-10 are captioned "Version with Markings to Show Changes Made."

Respectfully submitted,

Law Offices of
William E. McCracken and Associates

By: 
William E. McCracken
Reg. No: 30,195

Date: July 19, 2001

Version with Markings to Show Changes Made

Claims 4, 5, 7, 8, 12, 15-18, 20 and 23-27 have been amended as follows:

4. (Amended) A bandage according to claim 2 [or claim 3] wherein the third layer is permeable to vapour, thereby allowing the skin to breathe.

5. (Amended) A bandage according to [any of the claims 2 to 4] claim 2 wherein the third layer has substantially the same absorbency as, or less absorbency than, the first absorbent layer.

7. (Amended) A bandage according to [any of the claims 2, 3 or 4] claim 2 wherein the third layer is substantially impermeable to liquid but permeable to vapour.

8. (Amended) A bandage according to [any preceding claim] claim 1, wherein the bandage is shaped to conform to the whole of the lower leg and a foot of the patient.

12. (Amended) A bandage according to [any preceding claim] claim 1 wherein the bandage has opposite side edges wherein the side edges can be overlapped to a desired degree to fit the bandage to the patient's [limb] lower leg.

15. (Amended) A bandage according to [claim 13 or claim 14] claim 12 wherein suitable tabs and/or flaps are provided to ensure appropriate overlap.

16. (Amended) A bandage according to [any preceding claim] claim 1 wherein the first absorbent layer includes a polyester viscose material.

17. (Amended) A bandage according to [any preceding claim] claim 1 wherein the second absorbent layer includes a polyester felt, suitably an hydrophilic polyester felt.

18. (Amended) A bandage according to [any preceding claim] claim 1 wherein the second absorbent layer includes cotton wool.

20. (Amended) A bandage system comprising a first bandage according to [any preceding claim] claim 1 and a second bandage being a compression bandage, the second bandage comprising a sheet of elastic material and means for releasable maintaining the sheet of elastic material in a stretched condition around the patient's lower leg.

23. (Amended) A bandage system according to [claim 21 or claim 22] claim 20 wherein the means for maintaining the material around the patient's [limb] lower leg includes an outer attachment associated with a side edge region of the sheet, the outer attachment comprising a plurality of tabs provided along substantially the length of said side edge.

24. (Amended) A bandage system according to claim 23 wherein the tabs are so provided along the length of said side edge that there are substantially no gaps between adjacent tabs when the bandage is correctly applied to [a] the patient's [limb] lower leg.

25. (Amended) A bandage system according to claim 23 [or claim 24] wherein one part of a hook and fleece fastening means is provided on an inner face of each tab and the other of said hook and fleece fastenings is provided on the sheet.

26. (Amended) A bandage system according to claim 25 wherein each tab is stretchable whereby when the second bandage is applied to the [limb] lower leg of a patient, the degree of stretch of the sheet material and of the tabs determines the pressure applied to the [limb] lower leg at the respective tab.

27. (Amended) A bandage system according to [any of claims 20 to 26] claim 20 wherein the second bandage includes visual indication means to indicate whether the correct pressure is applied to the [limb] lower leg by the bandage.

Bandage

This invention relates to bandages. More particularly, but not exclusively, the invention relates to laminated bandages, for example, such bandages for use in the treatment of venous leg ulcers. The invention also relates to bandage systems

The treatment of leg ulcers is traditionally carried out using a four piece bandage system which comprises a first layer of orthopaedic wool, a second layer consisting of a crepe bandage, a third layer consisting of a light pressure bandage, and fourth layer consisting of a cohesive bandage. The application of this system requires complex measurement of arterial pressures and upwards of half an hour to apply it. Moreover, it is difficult to ensure that the pressure applied by the bandage at various regions is correct.

According to one aspect of this invention there is provided a bandage comprising a first absorbent layer for arrangement adjacent the skin of a patient, and a second absorbent layer on the first absorbent layer, the second absorbent layer having a greater propensity for absorption of fluids than the first absorbent layer, whereby when the bandage is arranged over a wound of a patient, the first absorbent layer can absorb fluid from the wound and the second absorbent layer can absorb said fluid from the first absorbent layer.

The bandage advantageously further includes a third layer on the second absorbent layer on the opposite side thereof to the first absorbent layer, the third layer may be an absorbent layer and preferably has a lower propensity for absorption than the second layer.

In one embodiment, the third layer is permeable to vapour, thereby allowing the skin to breathe, and may have substantially the same absorbency as, or less absorbency than, the first absorbent layer. The third layer may be formed of the same material as the first absorbent layer. Alternatively, the third layer may be substantially impermeable to liquid but permeable to vapour.

The bandage may be shaped to conform substantially to a limb of the patient. In the preferred embodiment, the bandage is shaped to conform to the lower leg of the patient. The bandage may be shaped to conform to the foot of a patient or to the lower leg and foot of a patient. The bandage may have a first part shaped to conform to the lower leg of a patient and a second part shaped to conform to the foot of a patient.

The bandage may have stitching along the region thereof conforming to the calf region of the leg, and may have stitching along the region conforming to the heel region of the foot. Stitching may also be provided to conform to the two region of the foot.

The bandage may have opposite side edges wherein the side edges can be overlapped to a desired degree to fit the bandage to the patients' limb. Securing means may be provided to secure the edge regions together. The securing means is preferably in the form of an adhesive tape. Suitable tabs and/or flaps may also be provided to ensure appropriate overlap.

The first absorbent layer may comprise a polyester viscose material. The second absorbent layer may comprise a polyester felt, suitably an hydrophilic polyester felt. Alternatively, the second absorbent layer may comprise cotton wool. The third layer may be a polyester viscose material.

The preferred embodiment of the invention has the advantage that it can be used to replace the first two layers of the system described in the introduction.

According to another aspect of this invention there is provided a bandage system comprising a first bandage as described above and a second bandage being a compression bandage, the second bandage comprising a sheet of elastic material and means for releasably maintaining the sheet of elastic material in a stretched condition around a patient's limb. Thus, the first bandage is intended to be applied over the skin of the patient's limb, and the second bandage is intended to be applied over the first bandage.

Preferably, the second bandage is formed from a rubber or rubber-like material, and may be formed a synthetic rubber, for example neoprene.

The means for maintaining the material around the patient's limb may include an outer attachment associated with a side edge region of the sheet. Preferably, the outer attachment comprises a plurality of tabs provided along substantially the length of said side edge. The tabs are preferably so provided along the length of said side edge that there are substantially no gaps between adjacent tabs when the bandage is correctly applied to a patient's limb. One part of a hook and fleece fastening means may be provided on an inner face of each tab. The other of said hook and fleece fastenings may be provided on the sheet. Preferably, the hook fastening is provided on each tab and the fleece fastening is provided on the sheet. In the preferred embodiment, the sheet comprises an outer layer formed of a plush material, said plush material constituting the fleece fastening. It will be appreciated that any other suitable fastening means may be provided on the tabs, for example a buckle or other suitable quick release device.

Each tab is preferably stretchable, whereby when the second bandage is applied to the limb of a patient, the degree of stretch of the sheet material and of the tabs determines the pressure applied to the limb at the respective tab.

Preferably, the second bandage includes visual indication means to indicate whether the correct pressure is applied to the limb by the bandage. The visual indication means is preferably adapted to indicate the extent to which the respective tab is stretched. Preferably, the visual indication means comprises a shape applied to at least some, and preferably each, of the tabs to indicate that the correct pressure is applied when the shape alters in a recognisable way. For example, the shapes may be in the form of an oblong, which alter to a square when the correct pressure is achieved.

The visual indication means may be so provided such that each indicates the same extent of stretch and correspondingly, the same pressure, or they may indicate different extents of stretch. For example, the visual indication means

to be arranged to indicate a gradation of pressure from one end of the bandage to the other.

The preferred embodiment of the bandage system has the advantage that it can replace all four layers of the system described in the introduction and is much simpler and faster to apply. Moreover, it is possible using the preferred embodiment to achieve the desired pressures simply and with accuracy.

At least one embodiment of the invention will now be described by way of example only with reference to the accompanying drawings in which:-

Fig. 1 is a plan view of a bandage;

Fig. 2 is a diagrammatic sectional view of a part of the bandage shown in Fig. 1, showing the laminations;

Fig. 3 is a diagrammatic side view of a bandage system comprising a bandage according to Figs. 1 and 2 surrounded by a second bandage, being a compression bandage, fitted onto a patient's leg;

Fig. 4 is a diagrammatic side view of the second bandage of Fig. 3, not fitted onto a patient's leg;

Fig. 5 is a diagrammatic perspective view of the second bandage of Fig. 3, wrapped around as if to be fitted onto a patient's leg;

Fig. 6 is a partial diagrammatic plan view, showing an upper part of the second bandage of Fig. 3, laid out flat in its unstretched state; and

Fig. 7 is a plan view of a flat piece of neoprene cut into a shape suitable for stitching up into the second bandage of Fig. 3.

Referring to Figs. 1 & 2, an absorbent bandage 10 is shown which is particularly suitable for venous leg ulcers, and which comprises a first or inner

layer 12, a second or middle layer 14, and a third or outer layer 16 (see particularly Fig. 2). The inner layer 12 is formed of an absorbent material, for example a polyester viscose material. The outer layer 16 is also formed of an absorbent material, which may also be a polyester viscose material. The middle layer 14 is also formed of an absorbent material which has a greater propensity for absorption than the material from which the inner layer 12 is formed. In the embodiment shown, the material from which the middle layer 14 is formed is an hydrophilic polyester felt. Alternatively, the middle layer 14 may be formed from another absorbent material, for example, cotton wool.

Referring specifically to Fig. 1, the absorbent bandage 10 is formed of a shaped sheet of a particular configuration that is intended to conform to the lower leg and foot of a patient. In Fig. 1, the bandage is shown in a flat condition suitable for stitching into a bandage conforming as aforesaid to the shape of the lower leg and foot of a patient. The absorbent bandage 10 comprises a leg portion 18 which is adapted to fit around the lower leg of a patient, and a foot portion 20 which is adapted to fit around the foot of a patient. A heel portion 21 connects the leg portion 18 to the foot portion 20.

The leg portion 18 is formed of first and second sections 18A, 18B, which are each defined along one side by respective edges 19 intended to be stitched together along their length. The particular profiles of the edges 19 are selected to ensure that the first part 18 conforms closely to the shape of the lower leg of a patient.

For the sake of clarity, the use of dashed lines in the drawings adjacent an edge is intended to represent that the edge should be stitched to an adjacent corresponding edge.

A heel portion 21 is provided between the leg and foot portions 18, 20 and has edges 21A, 21B. It is intended that the edges 21A are stitched together, and the edges 21B are also stitched together. In this way, in the resulting bandage 10, the heel portion 21 conforms to the heel of the patient. Further edges to be stitched are represented at 22A and 22B in the foot portion

20. These enable the foot portion 20 to conform to the shape of the patient's foot.

It will be seen that the first section 18A of the leg portion 18 is somewhat larger than the section 18B. This ensures that there is sufficient material for overlap so that the bandage 10 can fit any size of leg. When the bandage 10 is applied to the patient's lower leg, the second section 18B is first wrapped around the patient's leg and the first section 18A is then wrapped over the second section 18B. If necessary, the first section 18A can be trimmed to the appropriate size. In this way, the leg portion 18 can be adjusted to fit around the patient's leg comfortably. Appropriate adhesive tape (not shown) can be used to attach the section 18A to the section 18B.

The foot portion 20 comprises first and second sections 20A, 20B. The first section 20A comprises a tab 26, and the second section 20B comprises an outwardly extending portion 28. It is intended that the second section 20B is first wrapped over the top of the patient's foot, and the first section 20A wrapped over the second section 20B. The portion 28 is provided to ensure that the bandage 10 fully covers the top of the foot. Appropriate adhesive tape (not shown) can then attach the first section 20A to the second section 20B.

The first section 18A also comprises a lower portion 25. When the bandage is fitted to a patient's foot, lower portion 25 overlies the foot and the tab 26 overlaps the lower portion 25. The tab 26 is attached thereto by appropriate adhesive tape (not shown).

When the bandage has been fitted to the patient, it fits snugly around the patient's lower limb and foot, covering the venous ulcer to absorb any liquid secreted from the wound. No pressure is applied to the leg by the bandage 10.

Figs. 3 to 7 illustrate a compression bandage 110 for use with the laminated bandage 10 to form a bandage system.

The compression bandage 110 includes an upper part having a body 112

The compression bandage 110 includes an upper part having a body 112 including a sheet of perforated neoprene. The perforations are not illustrated in the drawings, but are approximately 2mm in diameter, and 10mm apart. The perforations allow the leg to breathe, i.e. they allow moisture to leave a patient's leg through the bandage 110. An inner side (in use) of the neoprene is covered with a soft nylon lining, which is comfortable against a patient's leg. The nylon is bonded to the neoprene layer. An outer side (in use) of the neoprene is covered with a layer of cotton plush material, also bonded to the neoprene layer, the function of which is described in more detail hereinafter.

The body 112 is bounded by an upper edge 114. A lower edge 115 of the body is stitched to a foot portion 117, which is also made from perforated neoprene enclosed within inner and outer layers of nylon and plush cotton respectively.

The body 112 is made up of two shaped sheets of neoprene 150 and 152 (see Figs. 4 and 7). The sheets 150 and 152 are cut with curved edges 154 which are stitched together to form the body 112. This results in a body shape which fits snugly around a patient's leg, taking account of variations in leg diameter between the ankle and calf.

The foot portion 117 is made from a simple sheet of neoprene but small slits are cut from the neoprene and the resulting exposed edges 155 joined with stitching 156 to form an appropriately shaped foot portion.

Fig. 7 illustrates a flat piece of neoprene cut into a shape suitable for stitching into the bandage 110, showing the places where stitching occurs to form the shaped bandage.

The stitching on both the body 112 and foot portion 117 is omitted from Fig. 7 for the sake of clarity.

AMENDED SHEET

Extending between the upper and lower edges 114 and 115 of the body 112 are side edges 116A and 116B. The side edge 116A is substantially straight and the side edge 116B slightly scalloped. The foot portion 117B includes corresponding straight and scalloped side edges 119A and 119B respectively. Affixed to the side edges 116A are a plurality of attachments 122 consisting of rectangular tabs of material provided with VELCRO (trade mark) hooks on their inner sides. The attachment 122 are each approximately 50mm in width (along the length of the patient's leg in use) and 120mm in length (around the patient's leg in use) in their unstretched states. The attachments 122 are affixed to the body 112 by two rows of stitching 132, shown in Fig. 7 and on the uppermost attachment only in Fig. 6. The attachments 122 are made of stretchy nylon material.

The foot portion 117 is also provided with similar attachments 122 affixed to the side edge 119A and a narrower end attachment 123.

Fig. 3 shows the bandage system in place on a patient's leg and Fig. 6 illustrates diagrammatically the shape of the bandage 110 during application to the leg. To apply the bandage system, the laminated bandage 10 is first applied to the leg as described above. The compression bandage 110 is then applied over the bandage 10, as follows. The compression bandage 110 is wrapped around the leg and the edge 116A is pulled over the edge 116B such that the two overlap.

The bandage is stretched around the leg, and the attachments 122 are laid onto the cotton plush material such that their hooks engage the material. In the stretched condition, the hooks open up slightly and engage the cotton plush material very firmly.

It is most important that the compression bandage 110 applies the correct pressure all along the leg from the top of the calf to the foot. The preferred pressure decreases gradually from about 35 to 40mmHg at the ankle to about 17 mmHg at the top of the calf. Rectangles 136 provided on the attachments 122 become square when the correct pressure is achieved. Such rectangles may be provided on all the attachments to ensure that the correct pressure is applied along the entire leg. It may be seen that the rectangles 136 of Fig. 5 become square in

Fig. 3 when the correct pressure is applied by the bandage to the leg.

Because the attachments 122 are provided essentially along the whole length of the compression bandage 110, gradually varying pressure is exerted along the patient's leg. No lines of high or low pressure are established if the bandage is used correctly.

It will be appreciated that in certain circumstances the absorbent bandage could be used in situations other than for the treatment of venous leg ulcers. In such cases, the use of the compression bandage would not be required. Further if the absorbent bandage is used to treat wounds other than on the leg, its configuration would be different.

Various modifications may be made to the above invention while still falling within its scope. The body of the compression bandage 12 need not be manufactured from neoprene but may be made from any suitable stretchy material, for example material incorporating rubber or elastane. The attachments need not incorporate hook or hook and fleece fastenings but may include tapes, cords or other similar materials attached together by hooks, loops, buckles or similar devices. The rectangle 136 may be replaced with any means for indicating the extent to which the body has stretched. For example, any shape may be printed onto the body. A plurality of such shapes may be used, for example, one adjacent to each projection to ensure an even pressure is exerted throughout the entire bandage. The bandage may be designed to be used at a single optimum pressure or it may be provided with different indications to provide different pressures depending on the circumstances. For example three adjacent rectangles could become square at respectively different pressures.

Claims

1. A bandage shaped to conform substantially to the whole of a lower leg of a patient, comprising a first absorbent layer for arrangement adjacent the skin of a patient, and a second absorbent layer on the first absorbent layer, the second absorbent layer having a greater propensity for absorption of fluids than the first absorbent layer, whereby when the bandage is arranged over a wound of a patient, the first absorbent layer can absorb fluid from the wound and the second absorbent layer can absorb said fluid from the first absorbent layer.
2. A bandage according to claim 1 further including a third layer on the second absorbent layer on the opposite side thereof to the first absorbent layer.
3. A bandage according to claim 2 wherein the third layer is an absorbent layer and has a lower propensity for absorption than the second layer.
4. A bandage according to claim 2 or claim 3 wherein the third layer is permeable to vapour, thereby allowing the skin to breathe.
5. A bandage according to any of claims 2 to 4 wherein the third layer has substantially the same absorbency as, or less absorbency than, the first absorbent layer.
6. A bandage according to claim 5 wherein the third layer is formed of the same material as the first absorbent layer.
7. A bandage according to any of claims 2, 3 or 4 wherein the third layer is substantially impermeable to liquid but permeable to vapour.

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8. A bandage according to any preceding claim, wherein the bandage is shaped to conform to the whole of the lower leg and a foot of the patient.

9. A bandage according to claim 8 including a first part shaped to conform to the whole of the lower leg of the patient and a second part shaped to conform to the foot of the patient.

10. A bandage according to claim 9 wherein the bandage has stitching along the region thereof conforming to the calf region of the leg, and stitching along the region conforming to the heel region of the foot.

11. A bandage according to claim 10 further including stitching in a region conforming to the toe region of the foot.

12. A bandage according to any preceding claim wherein the bandage has opposite side edges wherein the side edges can be overlapped to a desired degree to fit the bandage to the patient's limb.

13. A bandage according to claim 12 wherein securing means are provided to secure the edge regions together.

14. A bandage according to claim 13 wherein the securing means is in the form of an adhesive tape.

15. A bandage according to claim 13 or claim 14 wherein suitable tabs and/or flaps are provided to ensure appropriate overlap.

16. A bandage according to any preceding claim wherein the first absorbent layer includes a polyester viscose material.

17. A bandage according to any preceding claim wherein the second absorbent layer includes a polyester felt, suitably an hydrophilic polyester felt.

18. A bandage according to any preceding claim wherein the second absorbent layer includes cotton wool.

19. A bandage according to claim 2 wherein the third layer comprises a polyester viscose material.

20. A bandage system comprising a first bandage according to any preceding claim and a second bandage being a compression bandage, the second bandage comprising a sheet of elastic material and means for releasably maintaining the sheet of elastic material in a stretched condition around the patient's lower leg.

21. A bandage system according to claim 20 wherein the second bandage is formed from a rubber or rubber-like material.

22. A bandage system according to claim 21 wherein the second bandage is formed from a synthetic rubber, for example neoprene.

23. A bandage system according to claim 21 or claim 22 wherein the means for maintaining the material around the patient's limb includes an outer attachment associated with a side edge region of the sheet, the outer attachment comprising a plurality of tabs provided along substantially the length of said side edge.

24. A bandage system according to claim 23 wherein the tabs are so provided along the length of said side edge that there are substantially no gaps between adjacent tabs when the bandage is correctly applied to a patient's limb.

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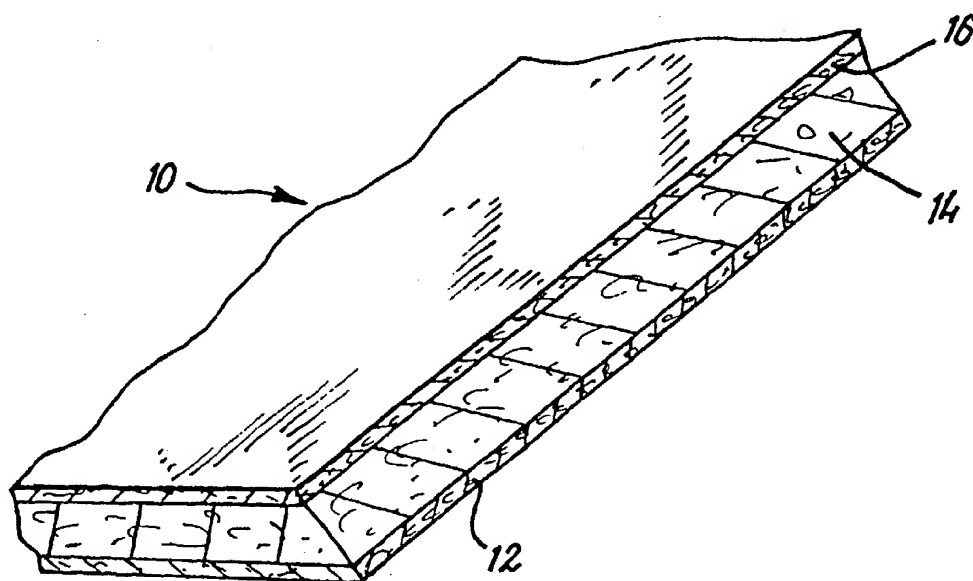


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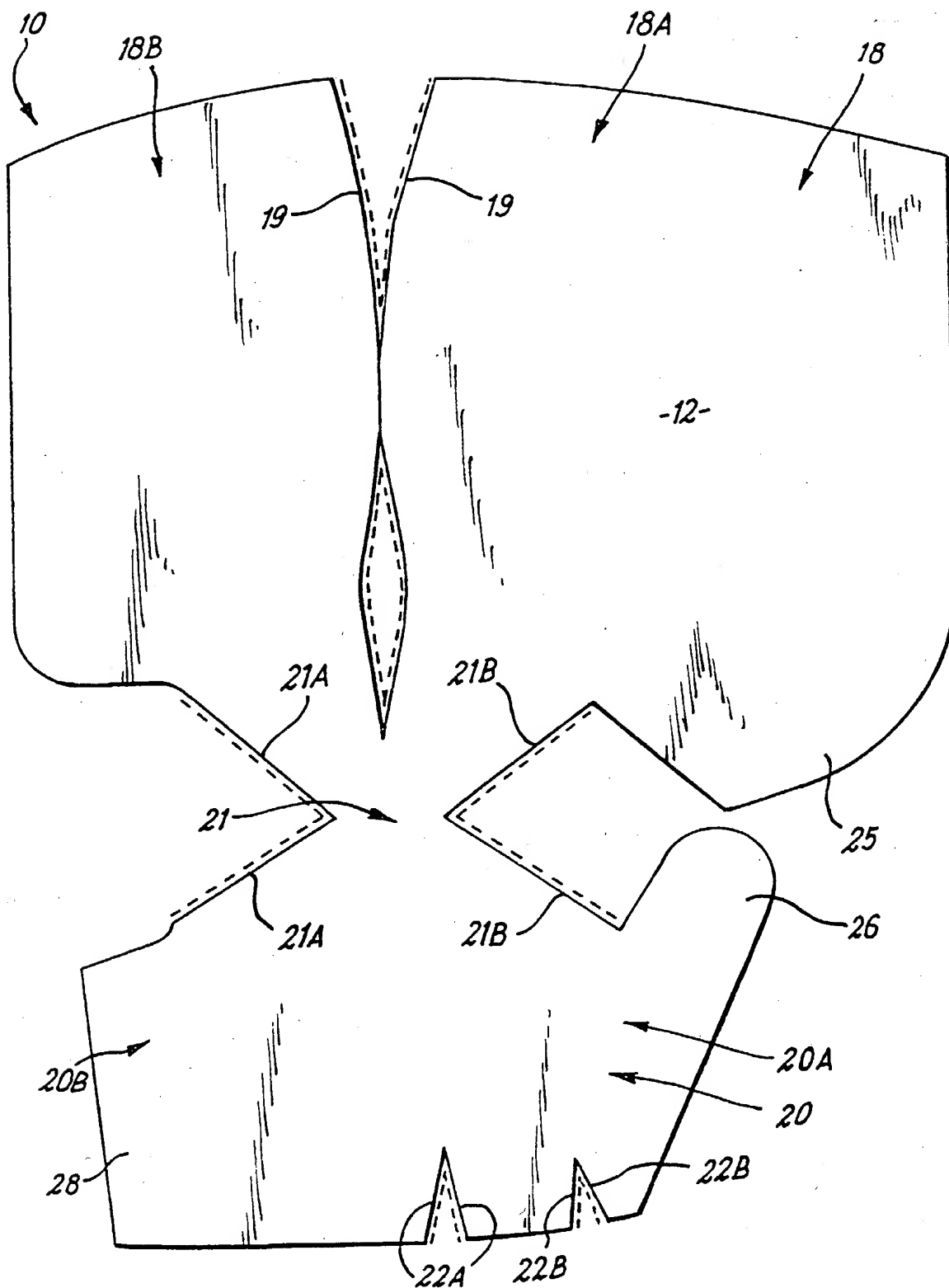
(57) Abstract

A bandage (10) includes a first absorbent layer (12) for arrangement adjacent the skin of a patient and a second absorbent layer (14) on the first absorbent layer (12), the second absorbent layer (14) having a greater propensity for the absorption of fluids than the first absorbent layer (12), whereby when the bandage (10) is arranged over a wound of a patient, the first absorbent layer can absorb fluid from the wound and the second absorbent layer can absorb said fluid from the first absorbent layer.

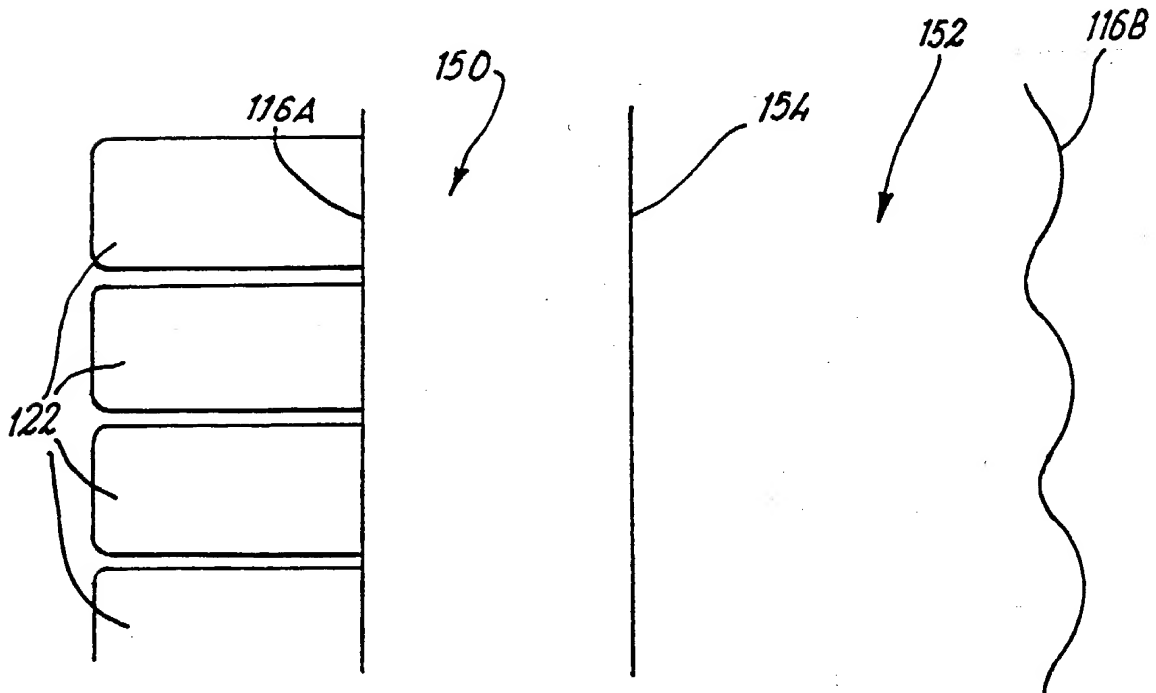
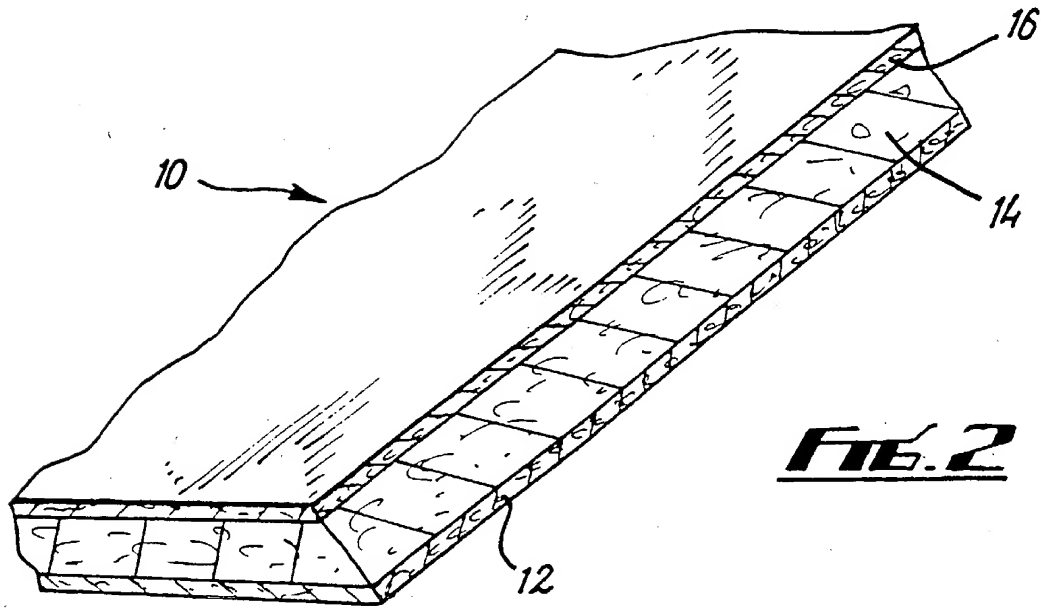
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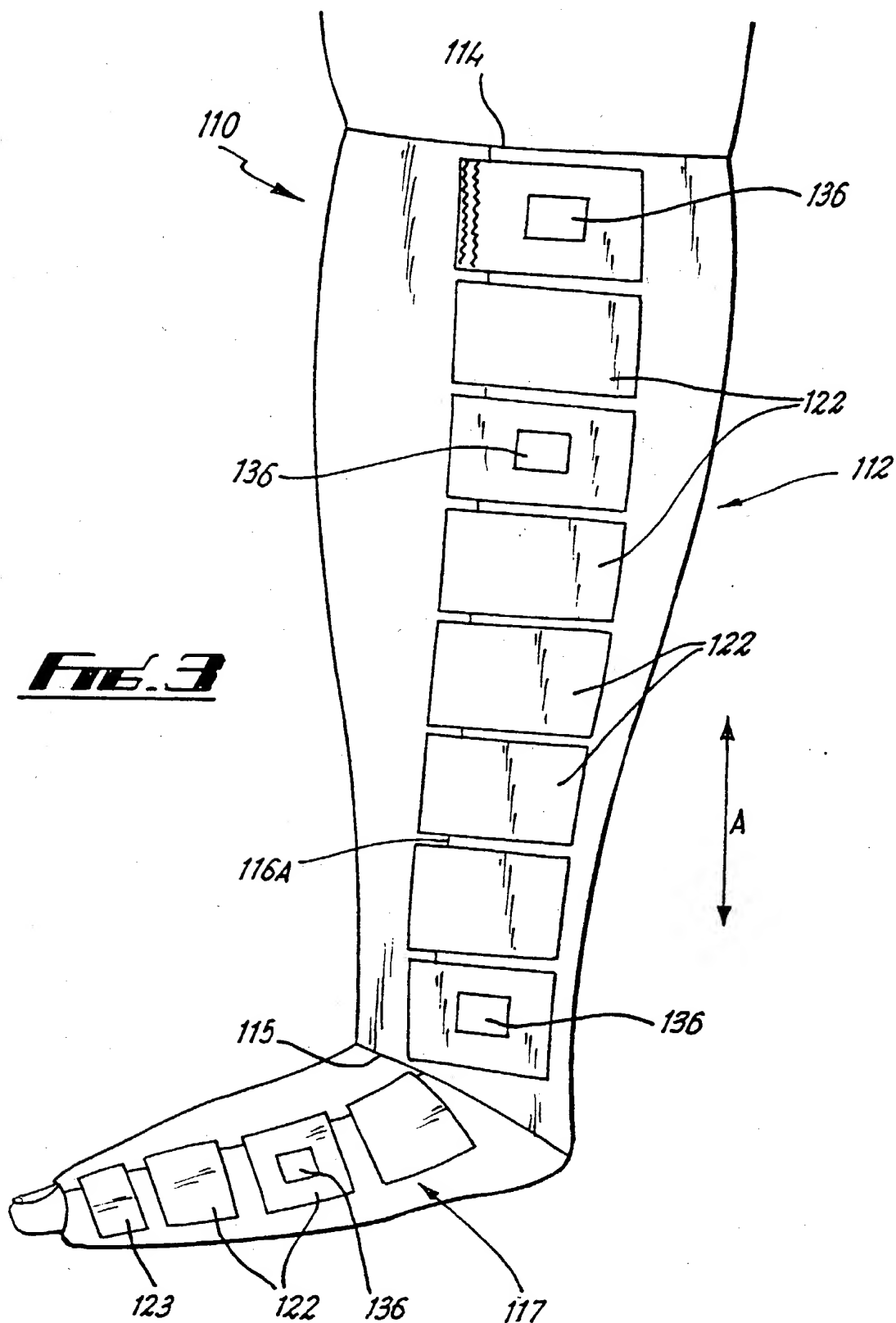
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***Fig. 1***

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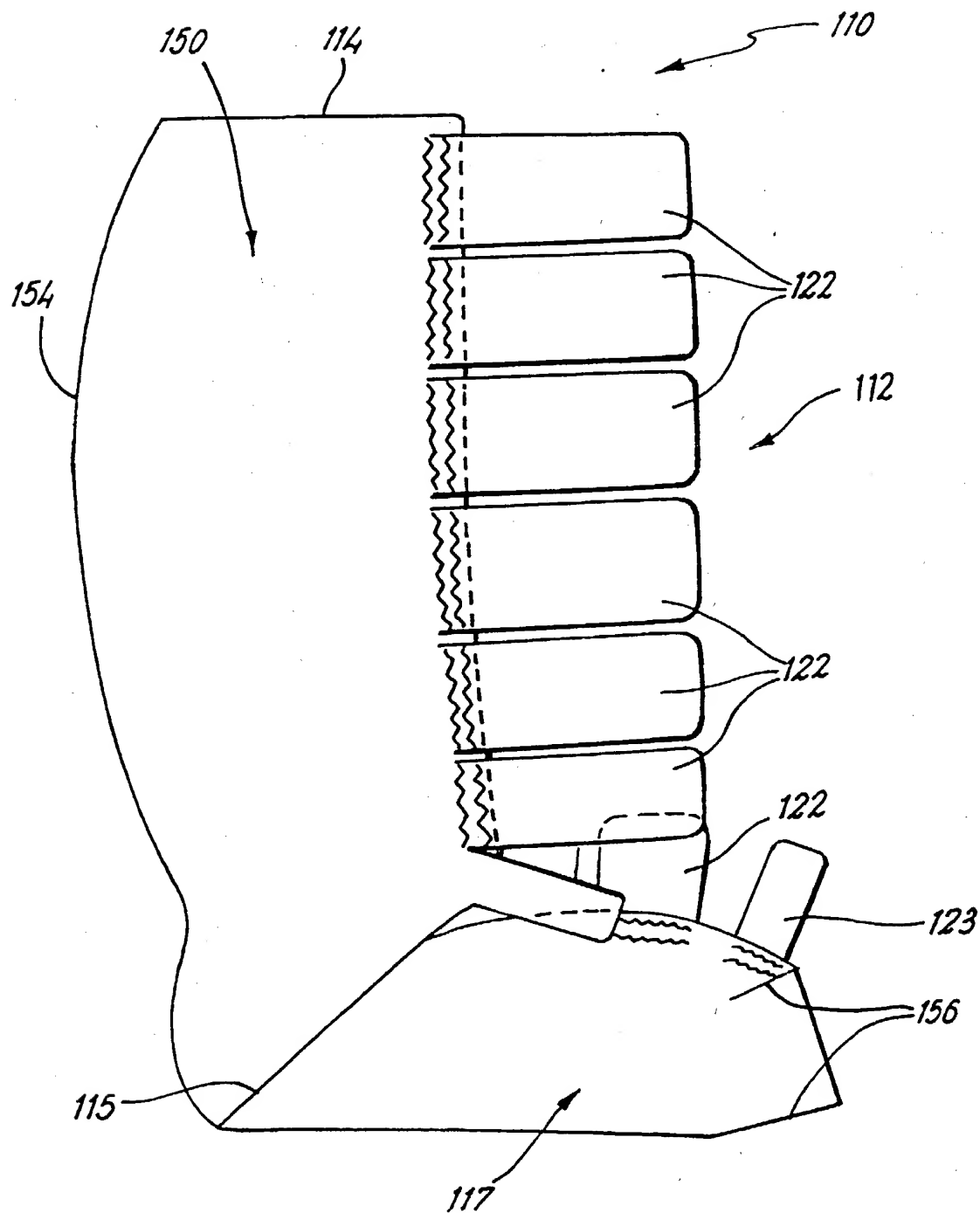


FIG. 4

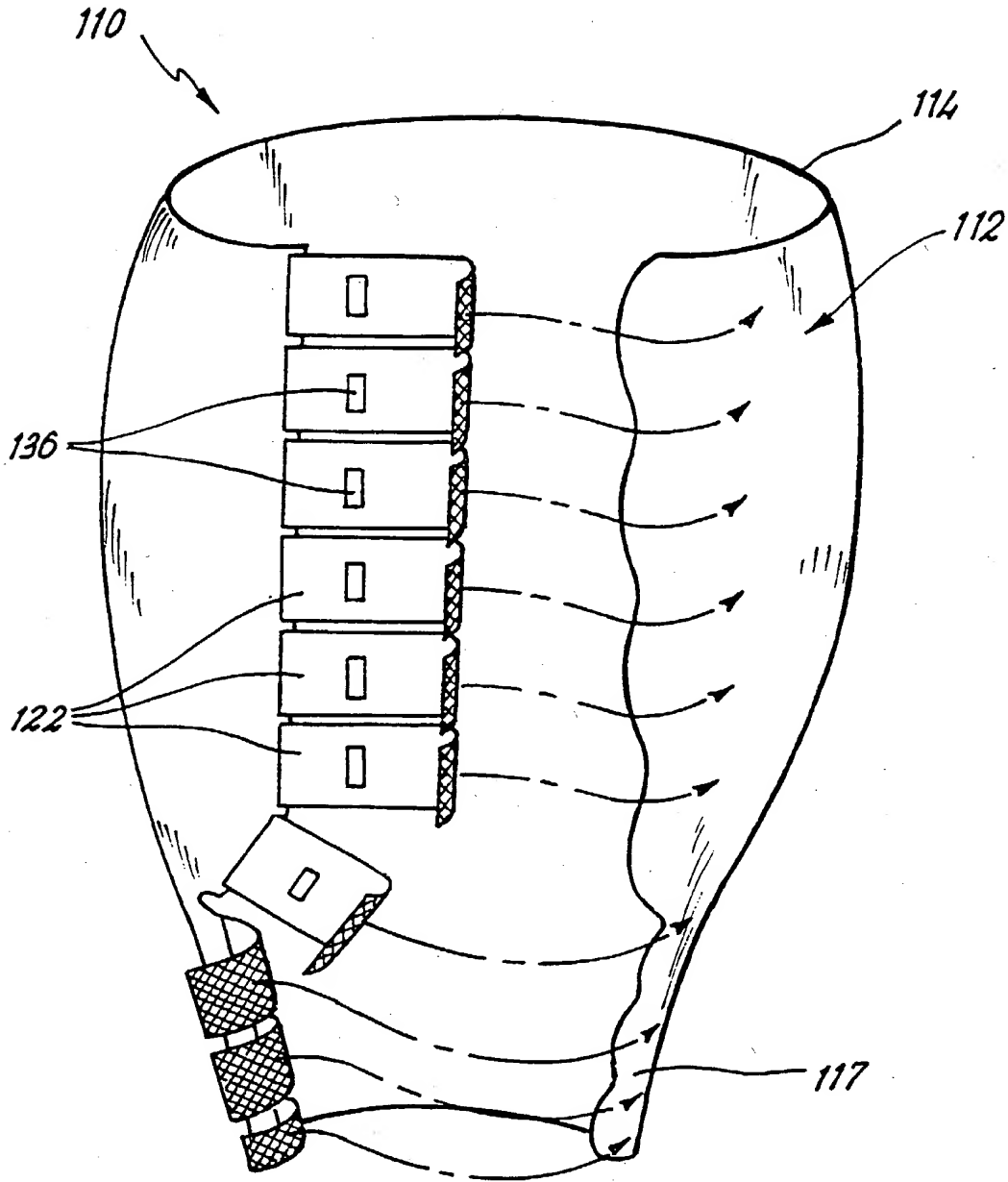


FIG. 5

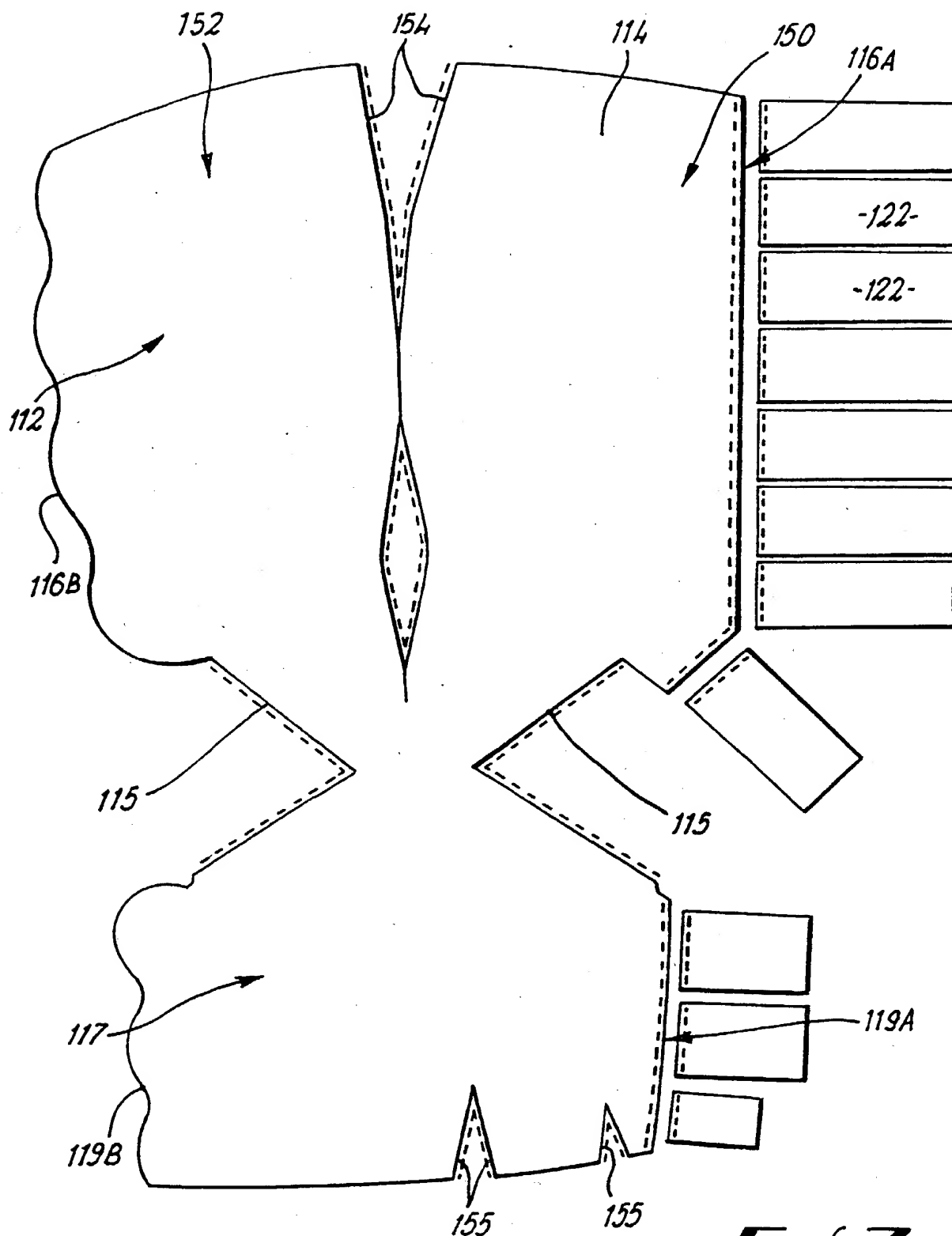


FIG. 7

DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name; I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled "BANDAGE," the specification of which (check one): ☐ is attached hereto; ☒ was filed on July 19, 2001 as Application Serial No. 09/889,657 and was amended on _____ (if applicable); ☐ was filed as PCT International Application No. _____ on _____ and was amended under Article 19 on _____ (if applicable). I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose to the Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

			Priority Claimed	
			<input type="checkbox"/>	<input type="checkbox"/>
(Application Serial Number)	(Country)	(Day/Month/Year Filed)	Yes	No
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(Application Serial Number)	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below:

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_____	(Day/Month/Year Filed)
(Application Serial Number)	(Day/Month/Year Filed)

I hereby claim the benefit under 35 U.S.C. §120 of any United States application(s) or PCT international application(s) designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior application(s) in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose to the Office all information known to me to be material to patentability as defined in 37 C.F.R. §1.56 which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PCT/GB00/00149	20/01/2000	
(Application Serial Number)	(Day/Month/Year Filed)	(Status-Patented, Pending or Abandoned)
9901085.2	20/01/1999	
(Application Serial Number)	(Day/Month/Year Filed)	(Status-Patented, Pending or Abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: I hereby appoint William E. McCracken (Reg. No. 30,195) as my attorney, with full powers of substitution and revocation, to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

Send correspondence to: William E. McCracken

FIRM NAME	PHONE NO.	STREET	CITY & STATE	ZIP CODE
<u>The Law Offices of</u> <u>William E. McCracken</u> <u>and Associates</u>	<u>312-674-4630</u>	<u>200 South Wacker Drive</u> <u>Suite 3100</u>	<u>Chicago, Illinois</u>	<u>60606</u>

Full Name of First or Sole Inventor BENNETT, Paul <i>1-00</i>	Citizenship GB
Residence Address - Street Cross Keys Cottage Rugby Road	Post Office Address - Street same
City (Zip) Swinford Leicestershire, LE17 6BN	City (Zip) same
State or Country Great Britain <i>GBN</i>	State or Country same
Date <input checked="" type="checkbox"/> 4-10-2001	Signature <input checked="" type="checkbox"/> <i>[Signature]</i>

Second Joint Inventor, if any CRACKNELL, Ian Douglas <i>2-00</i>	Citizenship GB
Residence Address - Street Manor Lodge Ashby Road	Post Office Address - Street same
City (Zip) Stapleton Leicestershire, LE9 8JD	City (Zip) same
State or Country Great Britain <i>GBN</i>	State or Country same
Date <input checked="" type="checkbox"/> 4/10/01	Signature <input checked="" type="checkbox"/> <i>[Signature]</i>